

## NEWLY REPORTED AND LITTLE KNOWN MAYFLIES (EPHEMEROPTERA) OF TEXAS<sup>1</sup>

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**ABSTRACT:** Ten species are newly reported for Texas along with new distributions for little known mayfly species in Texas. *Baetis armillatus*, *B. bimaculatus*, *B. dubius*, *Labiobaetis frondalis*, *Procloeon rufostrigatum*, *P. viridoculare*, *Ephemerella dorothea*, *Leptophlebia cupida*, *L. intermedia* and *Ephoron album* are reported in Texas for the first time.

Lugo-Ortiz & McCafferty (1995) presented the results of a biogeographic study of mayfly fauna and a checklist of 76 nominal species reported for Texas. Recent revisionary work (Henry 1993), a status change (Lugo-Ortiz & McCafferty 1994), new reports (Baumgardner et al. 1997) and a new species description (Wiersema 1998) raised this number to 94 nominal species reported for Texas.

Recent collections in the Big Thicket and Hill Country areas of Texas and examination of the author's personal collection revealed several species of mayflies previously unreported for Texas with new distributions for little known species. Collection records reported here raise the number of nominal species reported for Texas to 104 and cast doubt on the validity of a previous report of *Ephemerella inermis* Eaton.

All specimens were collected by the author and reside in the author's personal collection unless otherwise indicated. Institutions housing the other materials used in this study and acronyms are as follows: Purdue Entomological Research Collection (PERC) and the Burian Ephemeroptera Collection (BEC). New state records are marked with an asterisk (\*). Life stage and material abbreviations are as follows: L-larvae, M-adult male, F-adult female, rM-reared adult male, rF-reared adult female.

### BAETIDAE

#### *Apobaetis indepressus* Day

**New Collection Records.** WILLIAMSON CO., Georgetown, San Gabriel River at San Gabriel Park, 07 Oct 1995 (2M, 1F).

**Remarks.** This species was first reported in Texas by McCafferty & Davis (1992). There was some hesitation by those authors in reporting their larval specimens as *A. indepressus* because the larval stage of *A. etowah* (Traver) is unknown. The adult specimens I collected clearly are *A. indepressus*. This species is now known to occur in the Balconian and Texan biotic provinces in Texas (Lugo-Ortiz and McCafferty 1995).

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**\**Baetis armillatus* McCafferty & Waltz**

**Collection Records.** MONTGOMERY CO., New Caney, Caney Creek at US 59, 04 Jan 1997 (L); 08 Mar 1997 (L); 10 Mar 1997 (L). MONTGOMERY CO., New Caney, Peach Creek at FM 1485, 16 June 1997 (L, 7M, 1F, 1rM, 1rF). AUSTIN CO., San Bernard River at I-10, near Sealy, 20 May 1997 (L, 1rM).

**Remarks.** This species appears to be widely distributed across the eastern half of the country, and is also known from Ontario, Alberta, (Berner & Pescador 1988) and has recently been reported in Colorado in the West (McCafferty et al. 1993).

**\**Baetis bimaculatus* (Berner)**

**Collection Records.** MONTGOMERY CO., New Caney, Caney Creek at US 59, 08 Mar 1997 (L); 10 Mar 1997 (L). MONTGOMERY CO., New Caney, Peach Creek at FM 1485, 16 June 1997 (L, 2rM, 4rF).

**Remarks.** This species was described in Berner (1946) from adults and larvae collected in Florida and is currently known also from Alabama, Georgia, Mississippi, and South Carolina (Berner & Pescador 1988). The larval specimens collected on June 16 1997 agree well with Berner's description of this species with one exception, the first as well as the seventh pair of gills are suffused with reddish brown pigmentation. The collection of this species in Texas extends its known range westward.

**\**Baetis dubius* (Walsh)**

**Collection Records.** COMAL CO., Guadalupe River about 11-12 miles below Canyon Dam, 16 Feb 1997 (L, 1M); same data but about 7-8 miles below Canyon Dam, 16 Sept 1996 (1M). COMAL CO., Sattler, Guadalupe River about 4-5 miles below Canyon Dam, 08 Feb 1997 (L). HAYS CO., Blanco River at Post Road, near Kyle, 14 Apr 1997 (1M); 16 Apr 1997 (3M); 19 Apr 1997 (L, 1rM, 1rF), L (PERC); 20 Apr 1997 (L, 1F); 24 Apr 1997 (L, 1M), 1M (PERC); 05 May 1997 (L, 1rM, 1rF). WILLIAMSON CO., Georgetown, San Gabriel River at San Gabriel Park, 28 Apr 1997 (2F); 19 May 1997 (L, 1rM, 1rF).

**Remarks.** This species is widely dispersed throughout the eastern half of North America (Burks 1953; McCafferty & Waltz 1990) and the collection of this species in Texas extends its known range westward.

***Labiobaetis dardanus* (McDunnough)**

**New Collection Records.** HAYS CO., Blanco River at Post Rd., near Kyle, 14 Apr 1997 (L); 16 Apr 1997 (L); 19 Apr 1997 (L); 24 Apr 1997 (L, 1rM, 2rF). TRAVIS CO., Austin, Colorado River at Hwy 183, 22 Sept 1996 (1F).

**Remarks.** This species has been reported in the Austroriparian biotic province by Baumgardner et al. (1997). The data reported here place this species in the Balconian province as well.

**\**Labiobaetis frondalis* (Traver)**

**Collection Records.** NEWTON CO., Nichols Creek Hwy 87, 30 Dec 1996 (L). MONTGOMERY CO., New Caney, Peach Creek at FM 1485, 05 Jan 1997 (L); 16 June 1997 (L, 3rM, 4rF). MONTGOMERY CO., New Caney, Caney Creek at US 59, 08 Mar 1997 (L); 10 Mar 1997 (L), 26 May 1997 (L, 1rM, 1rF).

**Remarks.** This species is widely distributed across the eastern half of North America (Moriyama & McCafferty 1979).

***Labiobaetis propinquus* (Walsh)**

**New Collection Records.** SAN JACINTO CO., Winters Bayou at Hwy 150, 10 mi. SW of Cold Springs, 23 Dec 1996 (L). MONTGOMERY CO., New Caney, Caney Creek at US 59, 26 May 1997 (L, 3rM, 2rF).

**Remarks.** This species was first reported in Texas by McCafferty & Davis (1992) from the San Bernard River which borders Colorado and Austin County, near the eastern limits of the Texan biotic province. Lugo-Ortiz & McCafferty (1995) listed this primarily eastern species as existing in the Texan and Austroriparian provinces, but gave no distribution in the Austroriparian province. The data reported here place this species in the Austroriparian province.

*Paracloeodes minutus* (Daggy)

**New Collection Records.** TRAVIS CO., Austin, Colorado River at Hwy 183 bridge, 22 Sept 1996 (6F). TRAVIS CO., Austin, Bull Creek near Spicewood Springs Rd., 12 Oct 1996 (2F). MONTGOMERY CO., New Caney, Peach Creek at FM 1485, 16 June 1997 (L, 1rM, 3M, 1F).

**Remarks.** *Paracloeodes minutus* was first reported in Texas by McCafferty & Davis (1992) and is currently known to occur in the Austroriparian, Kansan, and Texan biotic provinces (Lugo-Ortiz & McCafferty 1995). The Travis County data listed here extends its known range in Texas into the Balconian biotic province.

*\*Proclleon rufostriatum* (McDunnough)

**Collection Records.** MONTGOMERY CO., New Caney, Caney Creek at US 59, 26 May 1997 (1rF).

**Remarks.** *Proclleon rufostriatum* is known from Manitoba, New Brunswick, Ontario and Quebec in Canada and Illinois, Kentucky, Maryland, Michigan, Minnesota, Pennsylvania, and Wisconsin in the United States (Lowen & Flannagan 1992). The discovery of *P. rufostriatum* in southeast Texas significantly extends its known range southward.

*\*Proclleon viridoculare* (Berner)

**Collection Records.** HAYS CO., Blanco River at Post Rd., near Kyle, 14 Apr 1997 (L); 19 Apr 1997 (18M); 20 Apr 1997 (49M, 1F); 24 Apr 1997 (52M), 2M (PERC); 05 May 1997 (larva). AUSTIN CO., San Bernard River at I-10, near Sealy, 20 May 1997 (L, 1rM). MONTGOMERY CO., New Caney, Caney Creek at US 59, 26 May 1997 (L). MONTGOMERY CO., New Caney, Peach Creek at FM 1485, 16 June 1997 (L, 3F, 2rM, 1rF), 1rM, 1F and L (PERC).

**Remarks.** This species is currently known from Alabama, Florida, Georgia, Mississippi and South Carolina (Berner & Pescador 1988, Unzicker and Carlson 1982: p. 3.85) and was recently reported in Michigan and Pennsylvania (Waltz & Munro 1996). The discovery of this species in the Balconian, Texan and Austroriparian provinces in Texas extends its known range westward.

## BAETISCIDAE

*Baetisca obesa* (Say)

**New Collection Records.** MONTGOMERY CO., New Caney, Caney Creek at US 59, 27 Dec 1996 (L); 04 Jan 1997 (L).

**Remarks.** This species was first reported in Texas by Lewis (1986) as occurring in the Neches River drainage system in the Austroriparian province. The data reported here place *Baetisca obesa* in the San Jacinto River drainage system within the Austroriparian province as well.

## EPHEMERELLIDAE

*\*Ephemerella dorothea* Needham

**Collection Records.** MONTGOMERY CO., New Caney, Peach Creek FM 1485, 05 Jan 1997 (L); 08 Mar 1997 (L, 2rM, 2rF); 10 Jan 1997 (L, 4rM, 3rF), 2rM, 1rF and L (PERC).

**Remarks.** The adult specimens I reared vary somewhat from published descriptions of this species (McDunnough 1931, Traver 1935, Burks 1953, Allen & Edmunds 1965) in that male genitalia are reminiscent of *E. inermis* Eaton, a western mountainous species. Larvae of the eastern *E. dorothea* and western *E. inermis* are also very similar morphologically, however the Texas larvae are clearly of the *dorothea* type, possessing coarse vermiform cuticular stippling typical of *E. dorothea* but not *E. inermis*. Adult variation may be a result of genetic drift in a

fringe population and there is little doubt the two species are closely related, if not sister species (pers. comm. W. P. McCafferty). Baumgardner et al. (1997) reported *E. inermis* from Texas based on one larva apparently collected in the Balconian province in which the date and collector where unknown. The farthest east *E. inermis* is known to occur are the headwaters of the Pecos and Rio Grande Rivers in New Mexico and its presence in Texas does not fit any biogeographic patterns (pers. comm. W.P. McCafferty). In light of this information and the presence of *E. dorothea* in East Texas, it is assumed that the *E. inermis* report is the result of a misidentification of *E. dorothea*.

*Eurylophella doris* (Traver)

**New Collection Records.** SAN JACINTO CO., Winters Bayou at Hwy 150, 23 Dec 1996 (L). MONTGOMERY CO., New Caney, Caney Creek at US 59, 27 Dec 1996 (L). NEWTON CO., Trout Creek at Hwy 87, 30 Dec 1996 (L). MONTGOMERY CO., New Caney, Peach Creek at FM 1485, 05 Jan 1997 (L). NEWTON CO., Cow Creek at Hwy 87, 14 Mar 1995, D. Hulsen & C. McDuffie (L).

**Remarks.** This species has been reported in Texas by Baumgardner et al. (1997). Using the key of Funk & Sweeney (1994), specimens from Texas have morphological characteristics of *E. doris* as opposed to the closely related *E. temporalis* (broader fore femora, and longer posteral-lateral projections of the 2nd and 3rd abdominal segments).

HEPTAGENIIDAE

*Stenonema exiguum* Traver

**New Collection Records.** AUSTIN CO., San Bernard River at I-10, near Sealy, 03 Feb 1997 (L). MONTGOMERY CO., New Caney, Caney Creek at US 59, 27 Dec 1996 (L); 04 Jan 97 (L); 05 Jan 1997 (L, 14rM, 12rF). MONTGOMERY CO., New Caney, Peach Creek FM 1485, 05 Jan 1997 (L); 10 Mar 1997 (L, 1M).

**Remarks.** This species has been known from the Austroriparian biotic province (Lugo-Ortiz & McCafferty 1995, Bednarik & McCafferty 1979) and the collection record listed here from Austin County extends its known distribution into the Texan biotic province.

*Stenonema terminatum* (Walsh)

**New Collection Records.** BELL CO., Lampasas River at FM 1123 14 Dec 1996 (L); Same data as previous but at Dice Grove Rd., 14 Dec 1996 (L). COMAL CO., Guadalupe River about 11 mi. below Canyon Dam, 7 Dec 1996 (L). HAYS CO., Blanco River at Post Rd., near Kyle, 24 Apr 1997 (1F). MONTGOMERY CO., New Caney, Caney Creek at US 59, 27 Dec 1996 (L); 04 Jan 1997 (L); 05 Jan 1997 (L, 10rM, 8rF). MONTGOMERY CO., New Caney, Peach Creek at FM 1485, 05 Jan 1997 (L); 10 Mar 1997 (4M, 1rF).

**Remarks.** This species has been known from the Austroriparian and Balconian biotic provinces (Lugo-Ortiz & McCafferty 1995). The collection of this highly variable and widespread species (Bednarik & McCafferty 1979) in the Texan province (Bell County data) was expected.

ISONYCHIIDAE

*Isonychia arida* (Say)

**New Collection Records.** MONTGOMERY CO., New Caney, Caney Creek at US 59, 04 Jan 1997 (L); 08 Mar 1997 (L); 10 Mar 1997 (L). MONTGOMERY CO., New Caney, Peach Creek at FM 1485, 05 Jan 1997 (L); 08 Mar 1997 (L, 2rM, 3rF); 10 Mar 1997 (L, 3rM, 2rF).

**Remarks.** This species is currently being reported in Texas by Baumgardner et al. (1997). The data reported here represent a new county record.

LEPTOPHLEBIIDAE

\**Leptophlebia cupida* (Say)

**Collection Records.** NEWTON CO., Trout Creek at Hwy 87, 30 Dec 1996 (3rM, 1rF), 1rM and 1rF (BEC).

**Remarks.** *Leptophlebia cupida* was found cohabiting with *L. intermedia* (Traver) in Trout Creek. This genus is being revised by Dr. Steve Burian, Southern Connecticut State University, who provided confirmations. Besides *L. intermedia* (see below), the only other species of this genus known for Texas is the distinctive *L. bradleyi* (Needham).

**\**Leptophlebia intermedia* (Traver)**

**Collection Records.** NEWTON CO., Trout Creek at Hwy 87, 30 Dec 1996 (8rM, 4rF), 2rM and 1rF (BEC).

**Remarks.** This species is widely distributed across the eastern half of North America.

***Paraleptophlebia volitans* (McDunnough)**

**New Collection Records.** MONTGOMERY CO., New Caney, Caney Creek at US 59, 04 Jan 1997 (L); 08 Mar 1997 (L, 2rM, 1rF); 10 Mar 1997 (L). MONTGOMERY CO., New Caney, Peach Creek at FM 1485, 10 Mar 1997 (L).

**Remarks.** This species has been known from Quebec (McDunnough 1924) to Florida and west into Louisiana, and it was recently reported in Texas by Baumgardner et al. (1997). The data reported here represent a new county record.

#### POLYMITARCYIDAE

**\**Ephoron album* (Say)**

**Collection Records.** MONTGOMERY CO., New Caney, Peach Creek at FM 1485, 16 June 1997 (2F).

**Remarks.** *Ephoron album* is a common western and midwestern species (McCafferty 1994) and Texas represents the southern limit of its known range.

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